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# Cooperative State-Federal Research in Agriculture and Forestry

*for better agriculture and better living*



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## Foreword

High farm productivity is one of this country's greatest blessings. Because of it we have ample supplies of fiber and of good nutritious food. Because of it less than 7 percent of the Nation's work force can provide this abundance. Chiefly because of it the real cost of food and fiber to the consumer—cost measured in the purchasing power of a given amount of labor—is the lowest in our history.

A major reason for today's high farm productivity is improved farm technology—that is, the application of the findings of science to farming.

That both science findings and their farm application have reached their present state of advancement is due to a unique system of science and education developed in this country. This is a system of cooperative support for progress. It involves: Cooperation in local communities between farmers, their organizations, business, and labor; cooperation between units of government within States; cooperation between State and Federal Governments; and cooperation between scientists and technicians doing the research and extension workers and county agents who help farmers adopt new practices.

In addition to conducting research to improve food, fiber, and forest products, scientists at State agricultural experiment stations and cooperating forestry schools are increasing research on reducing pesticide and other health hazards, handling agricultural wastes, and reducing air, soil, and water pollution. More emphasis is being placed on research to improve educational, economic, and social opportunities for rural people and to improve the environment in which they live.

An important part of this system of science and education is cooperative State-Federal research in agriculture and forestry, which is described on the following pages. Since 1888, cooperative agricultural research has been a consistent source of new knowledge that has enabled agriculture to move forward.

Scientists at State agricultural experiment stations are close to farmers and foresters. They work with them to solve problems. They avail themselves constantly of producers' advice and criticism. In this way, they are able to direct their efforts toward finding better and more economical ways of doing things.

Thus, rural areas all over the Nation have at their service a highly skilled group of scientists, many of them world authorities in their specialized fields of knowledge.



# Cooperative State-Federal Research in Agriculture and Forestry

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State-Federal cooperative agricultural research began in 1887—the year the Hatch Act established agricultural experiment stations in every State and inaugurated Federal grants to the State stations.

Every year since 1888 Congress has appropriated money for this research on a matching-fund basis. That is, any Federal funds appropriated are matched by the States.

In the amended Hatch Act of 1955, Congress reasserted that agricultural research deserved both State and public support to ensure a research position for agriculture and forestry equal to that of industry. In fiscal year 1965, this public support of agricultural research and development amounted to about \$381 million. It is estimated that about \$473 million was spent by industry for agricultural research and development in the same year.

In 1962 Congress recognized the need for more publicly supported forestry research by passing the McIntire-Stennis

Cooperative Forestry Research Act. This law authorizes the Secretary of Agriculture to pay grants for forestry research on a matching basis to land-grant agricultural experiment stations and to State schools of forestry that qualify for payment.

To assist the States in maintaining adequate physical plant for research, Congress enacted a program of matching grants for research facilities in 1963. To facilitate the work of the Department, Congress has also given the Secretary authority to make grants for specific research to qualified institutions such as State agricultural experiment stations and land-grant colleges.

Federal funds to the States appropriated under the Hatch and Facilities Acts and the McIntire-Stennis Cooperative Forestry Research Act and specific grants for research are administered by the Cooperative State Research Service of the U.S. Department of Agriculture.

Despite the great progress made in agriculture as the result of scientific re-

search, much remains to be done. Many old problems continue. Changing conditions bring new challenges.

Some of the most pressing research problems today are in the areas of: Soil and water conservation and overall natural resource development; insect and disease resistance of plants and animals; safe use of pesticides; improvement in crop varieties; farm production methods; management of forest resources; development of forest products; housing; home management; food and diets; family economic planning; marketing and pricing of farm commodities; farm product utilization; individual family and community adjustment to urbanization and technological and social change in general.

## STATE AGRICULTURAL EXPERIMENT STATIONS

EVERY State and the Commonwealth of Puerto Rico has a State agricultural experiment station.

In each State the agricultural experiment station is one of three main branches of the land-grant college of agriculture. The other two branches are the resident teaching staff and the State cooperative extension service.

In most States the main agricultural experiment station is on the land-grant college campus. Usually a number of branch stations and outlying experimental farms deal with special agricultural problems in certain areas of the State.

### *What they do*

The agricultural experiment station is the scientific research center for agriculture and forestry in the State. It conducts systematic, scientific, organized study concerned with immediate and long-

range problems of agriculture, rural living, forestry, and resource development and of consumer problems related to agricultural products.

Today over 40 percent of agricultural experiment station research is basic. This provides the foundation for the other 60 percent, usually spoken of as "problem directed," "practical," or "applied" research.

From the latter, in turn, comes the technical knowledge specialists pass on to farmers and families to solve practical farm production, marketing, and home-making problems. This is usually done through close alliance with cooperative extension programs and such various local action programs as those for rural areas development. Research findings are disseminated quickly and effectively through publications and other mass media.

A part of each experiment station's responsibility is to help train and instruct graduate students in the land-grant colleges who are preparing for a career in agricultural science. Through arrangements between the experiment station and the graduate school, students may schedule their classwork so they can devote some of their time to gain practical research experience. They may serve as research assistants under competent supervisors in experiment station laboratories or on experimental plots, or their assistantship may take some other form; the exact details vary according to the program.

### *Direction and financial support*

Each State agricultural experiment station has a director appointed by the land-grant college. Usually the director is an administrator with an agricultural science background, and his appointment is approved by the college's board of trustees

or regents. In a few States the director functions under an experiment station board, which is directly responsible to the State's Governor.

Stations are financed mainly by appropriations of the State legislatures and by Federal funds; Federal funds are paid to the States quarterly over the year. In addition, stations get support from many private sources; among these are farm cooperatives, industrial corporations, foundations, and numerous other grant-giving agencies.

Federal funds are more than matched by State appropriations. In fiscal year 1968, for example, Federal payments to the State experiment stations and other eligible institutions totaled \$57.3 million, which included \$10.1 million for regional research and \$1.5 million for special grants. State appropriations amounted to \$164.7 million. Other non-Federal sources contributed \$65.5 million. Altogether, non-Federal sources provided more than 78 percent of the funds spent on cooperative State agricultural research.

### *Regional research*

Since 1947 Congress has made additional funds available for research on which two or more State agricultural experiment stations cooperate. This regional research, to find answers to problems that cut across State lines, has become increasingly more important.

A Committee of Nine coordinates regional research. This committee was established by a provision in the Research and Marketing Act of 1946 that was retained in the 1955 amended Hatch Act.

Making up the Committee of Nine are eight station directors—two each from the north-central, southern, northeastern, and western regions—and a home economics administrator nominated by the

Home Economics Subcommittee of the Experiment Station Committee on Organization and Policy (ESCOP).

Proposals for regional research go first to a regional association of directors for review and selection of the ones to be recommended for approval. Technical committees then develop the project outlines. These technical committees are made up of station and Departmental scientists competent to do the research if it is approved. They represent the experiment stations and agencies that plan to cooperate.

The Committee of Nine screens all proposals submitted in the light of scientific merit and priority needs. The Cooperative State Research Service allocates appropriated funds to the stations for use on approved projects.

## COOPERATIVE STATE RESEARCH SERVICE

### *Agricultural research*

THE HATCH ACT provides that the Secretary of Agriculture is responsible to Congress for proper use of the Federal-grant funds appropriated for agricultural research in the States.

Since 1888 each Secretary of Agriculture has delegated this responsibility to an agency of the U.S. Department of Agriculture. The agency, originally called the Office of Experiment Stations, is now the Cooperative State Research Service (CSRS).

Before a research project gets Federal-grant support it must be approved by both the State experiment station director and CSRS.

CSRS helps coordinate research among the stations. It also helps coordinate State research with research of various agencies of the Department of Agriculture.

Such coordination eliminates unnecessary duplication.

Currently the Service has six major program areas: Agricultural economics, marketing, and rural and community development; animal science; plant science; forestry; utilization; and human nutrition and consumer use. In these various research areas the professional staff of the Service assists scientific workers in the States. Assistance includes review of Federal-grant and State research, analysis of progress and results of work, and review of publications and reports.

The administrator of the Cooperative State Research Service participates ex officio in national and regional meetings of the Experiment Station Section of the Association of State Universities and Land-Grant Colleges, serving as liaison between the Department of Agriculture and the State agricultural experiment stations.

The close cooperation between the research agencies of the Department of Agriculture and the State agricultural experiment stations has long served as a model in Federal-State work. Cooperation is brought about through frequent contact between station directors and scientists and specialists in the Cooperative State Research Service.

Data on Federal-grant and State-supported research projects are maintained in USDA's Current Research Information System (CRIS), along with the Department's research projects. Summary data for all projects on record are duplicated and made available to each station so that scientists have readily available information on current projects. Project summaries are entered in the National Science Information Exchange program.

Other activities of CSRS include: Publishing a quarterly journal of authorita-

tive commentary on agricultural research; furnishing State stations with a weekly mailing relating to administrative developments in the States and in CSRS; and cooperating with the National Agricultural Library to facilitate retrieval of scientific information. The quarterly journal, the *Agricultural Science Review*, contains commentary on published research, research in progress, and research trends.

### *Forestry research*

The McIntire-Stennis Cooperative Forestry Research Act of 1962 provides that the Secretary of Agriculture is responsible to Congress for the administration of Federal funds granted on a matching basis to land-grant colleges and experiment stations and to certain eligible State-supported institutions having forestry schools.

The Secretary has delegated this responsibility to the Cooperative State Research Service. Sixty institutions in all 50 States and Puerto Rico participate in what has come to be called the McIntire-Stennis program. Almost 500 forest scientists are leading research teams in 468 research projects covering the entire range of forestry, including: genetic improvement of forest trees; economic forces in timber management; marketing of wood raw materials and forest products; protection of forests from insects, disease, and fire; chemical and physical properties of wood; new and unique processes and products; and elimination of pollution resulting from wood-based industry.

Almost as significant as the research has been the involvement of graduate students in the McIntire-Stennis program. In the short time since the program was funded, over 800 graduate students in forestry have participated in its research projects. Almost 500 of these stu-

dents have earned graduate degrees; about two-thirds of that number are engaged in college level teaching or in professional research.

In addition to McIntire-Stennis funds, a large segment of Hatch Act funds is directed toward forestry research in State

agricultural experiment stations. The sum of these efforts has made academic forestry a viable and still-growing force in the resolution of natural resource problems. An annual report of McIntire-Stennis research is available on request to CSRS.

## **List of Eligible Institutions Under Cooperative State-Federal Research Programs in Agriculture and Forestry**

ALABAMA, Auburn 36830

Alabama Agricultural Experiment Station

Auburn University

ALABAMA, Normal 35762

Alabama Agricultural and Mechanical College\*

ALABAMA, Tuskegee Institute 36088

School of Agriculture, Tuskegee Institute\*\*

ALASKA, College 99701

University of Alaska

ALASKA, Palmer 99645

Alaska Agricultural Experiment Station

ARIZONA, Flagstaff 86001

Northern Arizona University\*\*\*

ARIZONA, Tucson 85721

Arizona Agricultural Experiment Station

University of Arizona

ARKANSAS, Fayetteville 72701

Agricultural Experiment Station of University of Arkansas

ARKANSAS, Pine Bluff 71601

Arkansas Agricultural, Mechanical and Normal College\*

CALIFORNIA, Arcata 95521

Humboldt State College\*\*\*

CALIFORNIA, Berkeley 94720

California Agricultural Experiment Station

University of California

COLORADO, Fort Collins 80521

Colorado Agricultural Experiment Station

CONNECTICUT, New Haven 06504

Connecticut Agricultural Experiment Station

Colorado State University

CONNECTICUT, Storrs 06268

Storrs Agricultural Experiment Station

DELAWARE, Dover 19901

Delaware State College\*

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\*Selected land-grant locations established under the act of 1890 (Second Morrill Act) certified eligible to receive specific grants in 1967.

\*\*Non-land-grant location selected on a competitive basis to receive specific grants in 1967.

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\*\*\*Institutions at other than land-grant locations certified for support under the Cooperative Forestry Research (McIntire-Stennis) Act of Oct. 10, 1962 (Public Law 87-788).

- DELAWARE, Newark 19711  
 Delaware Agricultural Experiment Station  
 University of Delaware, College of Agricultural Sciences and Agricultural Experiment Station
- FLORIDA, Gainesville 32601  
 Agricultural Experiment Station, University of Florida
- FLORIDA, Tallahassee 32307  
 Florida Agricultural and Mechanical University\*
- GEORGIA, Athens 30601  
 School of Forest Resources, University of Georgia
- GEORGIA, Experiment 30212  
 Georgia Agricultural Experiment Station
- GEORGIA, Fort Valley 31030  
 Fort Valley State College\*
- HAWAII, Honolulu 96822  
 Hawaii Agricultural Experiment Station  
 University of Hawaii
- IDAHO, Moscow 83843  
 Idaho Agricultural Experiment Station  
 University of Idaho
- ILLINOIS, Carbondale 62903  
 Southern Illinois University\*\*\*
- ILLINOIS, Urbana 61801  
 Illinois Agricultural Experiment Station  
 University of Illinois
- INDIANA, Lafayette 47907  
 Indiana Agricultural Experiment Station  
 Purdue University
- IOWA, Ames 50010  
 Agriculture and Home Economics Experiment Station of Iowa State University
- KANSAS, Manhattan 66502  
 Kansas Agricultural Experiment Station  
 Kansas State University
- KENTUCKY, Frankfort 40601  
 Kentucky State College\*
- KENTUCKY, Lexington 40506  
 Agricultural Experiment Station of University of Kentucky
- LOUISIANA, Baton Rouge 70803  
 Louisiana Agricultural Experiment Station  
 Louisiana State University School of Forestry and Wildlife Management
- LOUISIANA, Baton Rouge 70813  
 Southern University and Agricultural and Mechanical College\*
- LOUISIANA, Ruston 71271  
 Department of Forestry, Louisiana Polytechnic Institute\*\*\*
- MAINE, Orono 04473  
 Maine Agricultural Experiment Station  
 University of Maine
- MARYLAND, College Park 20742  
 Maryland Agricultural Experiment Station  
 University of Maryland
- MARYLAND, Princess Anne 21853  
 Maryland State College\*
- MASSACHUSETTS, Amherst 01002  
 Massachusetts Agricultural Experiment Station  
 University of Massachusetts

- MICHIGAN, Ann Arbor 48104  
University of Michigan\*\*\*
- MICHIGAN, East Lansing 48823  
Michigan Agricultural Experiment  
Station  
  
Michigan State University
- MICHIGAN, Houghton 49931  
Michigan Technological University\*\*\*
- MINNESOTA, St. Paul 55101  
Minnesota Agricultural Experiment  
Station  
  
University of Minnesota
- MISSISSIPPI, Lorman 39096  
Alcorn Agricultural and Mechanical  
College\*
- MISSISSIPPI, State College 39762  
Mississippi Agricultural Experiment  
Station  
  
Mississippi State University
- MISSOURI, Columbia 65201  
Missouri Agricultural Experiment Sta-  
tion  
  
School of Forestry, University of Mis-  
souri
- MISSOURI, Jefferson City 65102  
Lincoln University\*
- MONTANA, Bozeman 59715  
Agricultural Experiment Station of  
Montana State University
- MONTANA, Missoula 59801  
Forest and Conservation Experiment  
Station, School of Forestry, Univer-  
sity of Montana\*\*\*
- NEBRASKA, Lincoln 68503  
Nebraska Agricultural Experiment  
Station  
  
University of Nebraska
- NEVADA, Reno 89507  
  
Nevada Agricultural Experiment Sta-  
tion  
  
University of Nevada, Max C. Fleisch-  
mann College of Agriculture
- NEW HAMPSHIRE, Durham 03824  
New Hampshire Agricultural Experi-  
ment Station  
  
University of New Hampshire
- NEW JERSEY, New Brunswick 08903  
New Jersey Agricultural Experiment  
Station
- NEW MEXICO, Las Cruces 88001  
New Mexico Agricultural Experiment  
Station  
  
New Mexico State University
- NEW YORK, Geneva 14456  
New York State Agricultural Experi-  
ment Station
- NEW YORK, Ithaca 14850  
Cornell Agricultural Experiment Sta-  
tion  
  
New York State College of Agricul-  
ture at Cornell University
- NEW YORK, Syracuse 13210  
State University College of Forestry  
at Syracuse University\*\*\*
- NORTH CAROLINA, Greensboro  
27411  
The North Carolina Agricultural and  
Technical University
- NORTH CAROLINA, Raleigh 27607  
North Carolina Agricultural Experi-  
ment Station  
  
North Carolina State University at  
Raleigh

- NORTH DAKOTA, Fargo 58102  
North Dakota Agricultural Experiment Station
- North Dakota State University of Agriculture and Applied Science
- OHIO, Wooster 44691  
Ohio Agricultural Research and Development Center
- OKLAHOMA, Langston 73050  
Langston University\*
- OKLAHOMA, Stillwater 74074  
Oklahoma Agricultural Experiment Station
- Oklahoma State University
- OREGON, Corvallis 97331  
Oregon Agricultural Experiment Station
- Oregon State University
- PENNSYLVANIA, University Park 16802  
Agricultural Experiment Station of Pennsylvania State University
- PUERTO RICO, Rio Piedras 00928  
Agricultural Experiment Station of the University of Puerto Rico
- RHODE ISLAND, Kingston 02881  
Rhode Island Agricultural Experiment Station of Rutgers
- University of Rhode Island
- SOUTH CAROLINA, Clemson 29631  
Agricultural Experiment Station of Clemson University
- SOUTH CAROLINA, Orangeburg 29115  
South Carolina State College\*
- SOUTH DAKOTA, Brookings 57006  
South Dakota Agricultural Experiment Station
- South Dakota State University
- TENNESSEE, Knoxville 37916  
Tennessee Agricultural Experiment Station
- University of Tennessee
- TENNESSEE, Nashville 37203  
Tennessee Agricultural and Industrial State University\*
- TEXAS, College Station 77843  
Texas Agricultural Experiment Station of Texas A&M University
- Texas A&M University
- TEXAS, Prairie View 77445  
Prairie View Agricultural and Mechanical College\*
- UTAH, Logan 84321  
Utah State Agricultural Experiment Station
- VERMONT, Burlington 05401  
Vermont Agricultural Experiment Station
- VIRGINIA, Blacksburg 24061  
Agricultural and Life Sciences Research Division, Virginia Polytechnic Institute
- VIRGINIA, Petersburg 23803  
Virginia State College\*
- WASHINGTON, Pullman 99163  
Washington Agricultural Experiment Station
- Washington State University

WASHINGTON, Seattle 98105  
University of Washington\*\*\*

WEST VIRGINIA, Morgantown 26506  
West Virginia Agricultural Experiment Station

West Virginia University

WISCONSIN, Madison 53706  
Agricultural Experiment Station of  
University of Wisconsin

WYOMING, Laramie 82070  
Wyoming Agricultural Experiment  
Station

University of Wyoming

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PREPARED BY

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